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ABSTRACT

The overall goals of an advanced education course at William and Mary College using microcomputers to stimulate student creativity are to present the necessary background about creativity as it has been studied by psychologists and educators, to introduce students to instructional strategies which may develop creativity, and, finally, to increase their own creative abilities. Many students and teachers are reluctant to use the computer because of its unfamiliarity; however, this course exploits the unfamiliarity to explore the capabilities of the computer and simultaneously teach creativity. Several microcomputer activities used in the class are described and the implications of such instruction are discussed. Seven references are listed. (RAA)

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CREATIVITY THROUGH THE MICROCOMPUTER

by

George M. Bass

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CREATIVITY THROUGH THE MICROCOMPUTER

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"Creativity is a battle
against fixed attitudes."
(Raudsepp, 1977, p.55)

In many ways teaching a college course on creativity is very similar to teaching students how to use a computer. Both sets of students come with many preconceived notions about the subject. Usually these attitudes have not been built upon direct experience with computers or creativity experiences but on hearsay and vague expectations. This lack of experience has often led students to be fearful of their own ability to be creative or to master the computer. Yet a willingness to break free from these frozen views and to see ideas and problems from a new perspective is needed in both areas for the student to succeed.

During the fall semester of 1979, I taught an advanced education course on creativity. This course was designed to be a seminar for students who had successfully completed an introductory educational psychology course. My overall goals were to present students the necessary background about creativity as it has been studied by psychologists and educators; to introduce them to instructional strategies which may help develop creativity; and finally, to increase their own creative abilities. Eleven students took the course.

COURSE ACTIVITIES

In order to distinguish this course from just another elective, I wanted to use activities not typically found in other courses they had taken. Entering national contests, participating in creative growth games, working on word puzzles and logic problems, reading and solving detective stories, producing poetry and written compositions, and using a microcomputer were introduced throughout the semester. (More traditional activities such as assigned readings, class presentations and projects, and a final position paper were also used to increase the learning process.)

Because the microcomputer is such a new educational technology, it is an ideal way to break the chains of student expectation and release any hidden potential. Yet the fear of the unknown or the exaggerated visions of computer power (such as HAL in 2001) were a real concern. In order to reduce this possibility, I began the first class with TLC -- Tender Loving Computer. Other exercises using the capabilities of our Apple II micro-

computer were later interspersed throughout the course.

MICROCOMPUTER ACTIVITIES --
OBJECTIVES AND RESULTS

1. Course Syllabus

Since this was the first time the creativity course had ever been taught, I felt it necessary to give students my course objectives, assignments, and requirements during the first session. However, I wanted to communicate this basic information in a nontraditional way as mentioned earlier. I also wanted the students in the class to meet one another and to learn of any personal objectives each individual might have for the class. To accomplish these objectives, I wrote a program on the microcomputer to interact with each student. After requesting the student's name and some background information (interests, reasons for taking the course, etc.) and engaging him in chit chat, the program presented relevant information about the course and then introduced the student to the capabilities of the microcomputer. Using a variety of programs currently available for the Apple II, the students were presented with computer graphics, text manipulation, and game playing experiences, e.g., Rock/Scissors/Paper, Dragon's Maze, Star Trek.

The results of this experience were quite positive. The students had never seen a microcomputer before and were surprised with the variety of things it could do. As each student took a turn, the rest of the class crowded around the color monitor to watch the action. They got to know each other through the typed conversation with the Apple II. They also got to see many of the programs available to them outside of class. (For two students this introductory session led to a semester-long journey with Star Trek after almost every class!) This computerized syllabus generated interest and set the tone for an unusual class.

2. "How I Spent My Summer Vacation" Assignment

One of the most common assignments that teachers give when students return to school in the fall is to write a theme on how the student spent his summer vacation. In order to get the students in the class to begin thinking of novel ways to solve problems or accomplish tasks, I gave the class this typical task, but asked them to solve it in a creative way. When they next came to class with their creative solutions, I shared with them one solution using the microcomputer. I programmed a story which contained an overall structure but required the addition of certain words and information from the user to compose a complete tale of how the Apple II spent its summer. Besides showing how unique paragraph-length stories can be created using a microcomputer, this exercise laid the groundwork for a future class discussion on <u>form</u> versus <u>content</u> in creating something new.

While the students' creative solutions to this assignment were indeed varied (a picture scrapbook, a summer job advertisement, "first grader's" paper, fantasy story), their response to the Apple II story was enthusiastic. They worked as a group supplying the adjectives and other words requested by the program. However, the first time through the story, they had no idea how these words were going to be used. The resulting narrative was a humorous, if not entirely accurate, account of what a microcomputer might do over the summer on a deserted college campus. The second time through the program the students chose their words more carefully to fit into the structure of the story they remembered. While this second experience resulted in a new version of the tale, in some ways it was not as entertaining as the first version. In resulting class discussions the notion of <u>appearance</u> versus <u>substance</u>, "how said" versus "what said," and the role of the creator and his audience in giving meaning to a creation were all related to this computer/human-generated story.

3. The Apple II Pops

The Apple II microcomputer can make music-like sounds through the Apple's built-in speaker. A number of commercial programs are available to create these songs with minimal programming. Using the PORTE Music Interpreter by Rainbow Computing Inc., I showed the students how to program and save songs they composed using the Apple's speaker. I wanted the students to construct a nonverbal creation, to become more comfortable with using the microcomputer as a tool, and to learn an introductory programming approach.

At the class concert during which each aspiring composer introduced his creative effort, it became readily apparent that my objectives were achieved. Although the variety of songs (from birdlike melodies to atonal experimentations to K-Tel music advertisements) again showed the diversity in the class, all students completed the assignment and expressed their growing ease with the Apple. They commented on the computer as most forgiving, but also most demanding. Mistakes were easy to correct by retyping the note or line, but putting commands in the correct syntax was

required for the program to work. In addition, the students expressed an appreciation of each other's efforts regardless of previous musical experience.

4. Aphorism Construction

Adapting an Aphorism Generator published by J.D. Robertson (Creative Computing, August 1979), I programmed the Apple to construct aphorisms such as "Alcohol is the liver of stress" through random combinations of lists of the three key nouns. The class was asked to generate sayings using the format "___ is the ___ of ___" as well. Four students were chosen to do this individually, teams of two and three students were chosen to do it collectively, and the remaining two students worked as a team to select those aphorisms generated by the computer which they thought most creative. After each individual or team had chosen their best two sayings, these aphorisms were read to the rest of the class without identifying the origin. Each class member separately ranked the three best aphorisms; these rankings were then tallied and the highest rated sayings identified. My objective was to stimulate a discussion of individual, group, and random efforts in creating original products.

Although the results were certainly not definitive (one pair had written both of the top ranked sayings), they did lead to a lively debate on the difference between random replacement and meaningful combinations. The idea of "creativity is in the eye of the beholder" was also reinforced by this exercise. The writer and the reader put meaning in aphorisms and other creative products.

IMPLICATIONS

The use of these microcomputer activities added greatly to the overall achievement of the course goals. One reason for this success was the close fit between the course topic and the capabilities of the computer. Indeed, creativity with its "battle against fixed attitudes" stresses a concern with new images and experiences. Torrance (1979), a major figure in creativity research, has even recommended a three-stage instructional model to enhance incubation and creative thinking. Activities using a microcomputer can be implemented at each stage in his model. Stage 1 is aimed at heightening anticipation; it tries to motivate learners to relate each learning task to meaningful experiences. The course syllabus and summer story certainly attracted the students' attention and stimulated their curiosity and imagination. Other computer activities such as role playing games and simulations should also warm-up students and increase their anticipation. Stage 2 turns this initial interest into deepening expectation. Song development is one example of the various information processing patterns which Torrance suggests. Stage 3 simply tries to take creative thinking and keep it going. Seeing the various capabilities of a microcomputer in this course should permit students a better understanding of future technological applications in their own lives.

Although psychologists have perhaps focused more on the instructional demands of creativity and problem solving courses than other subjects, the psychological principles underlying such instructional planning and design can be generalized to other college subjects as well. Treffinger and Huber (1975) have emphasized that the content of any course can be analyzed according to an instructional systems approach. Such an approach focuses on identifying specific instructional objectives; diagnosing characteristics of entering learners; developing sequential, learning hierarchies and teaching strategies to accomplish the objectives; and assessing performance to determine learner achievement. Following such a basic instructional model will allow any teacher to estimate the value of particular educational technologies in a chosen course.

The specific issues for incorporating the computer into this current educational technology have been widely discussed during the past decade. Usually the chief criticisms against such a move have revolved around cost and teacher resistance (Trow, 1977). Yet these concerns have mostly been associated with computer-assisted instruction using a large time-sharing system. Recently, there has been a shift from CAI programs aimed at individualized teaching of a single subject matter toward computer-managed instruction in which the system directs the entire instructional process (Splittgerber, 1979). Even with this move toward CMI, there still remains an implementation problem into the public schools. Economic, technological, and instructional design considerations have kept the potential benefits from being realized.

But a revolution is in the making! With the recent rise in accessibility of microcomputers, the cost argument has been greatly deflated. With the growth in microcomputer design and capabilities, many of the technological concerns about access, memory storage, and program languages have also been met. With the growing commitment to instructional design relevant to CAI and CMI, better software

is becoming available. Nevertheless, if teacher resistance is not overcome, all these changes will probably be for nought.

The experiences detailed in this paper reveal one possible strategy to introduce the applicability and benefits of microcomputers. By incorporating course content with microcomputer capabilities, students can gradually come to appreciate the vast educational potential in this new technology. With such a focus on computer-enriched instruction, the teacher is less likely to fear displacement from the teaching/learning process. The emphases of CEI experiences are on stimulating class discussions and group interactions, not taking over the teacher's role. As Eisele (1979) has pointed out, the possible uses of microcomputers in the classroom are many: as tools for creative problem solving, games and simulations, drill and practice; testing and test construction. By taking advantage of these uses to enrich classroom activities, today's educator can be accountable and productive without feeling depersonalized or replaceable.

And isn't that a reasonable way to win the battle against restrictive fixed attitudes?

SUMMARY AND CONCLUSIONS

Since many students and teachers are hesitant to use the computer because they are unfamiliar with what it can -- and cannot -- do, it is imperative that ways be developed to introduce gradually a more realistic appraisal of the computer's capabilities. If these benefits are provided through computer-enriched activities which do not reduce the main role of the teacher, more acceptance of such activities should be forthcoming. With the advent of microcomputer systems almost any small college can afford the computing power that was available only to large institutions just a decade ago. An example of such an application in a college course on creativity was provided to illustrate the feasibility of such a CEI approach.

REFERENCES

Eisele, J.E. "Classroom Use of Microcomputers." Educational Technology. October 1979, p. 13-15.

Raudsepp, E. Creative Growth Games. New York: Jove Publications, 1977.

Splittgerber, P.L. "Computer-based Instruction: A Revolution in the Making?" Educational Technology. January 1979, p. 20-26.

Torrance, E.P. "An Instructional Model for Enhancing Incubation." Journal of Creative Behavior. 1979, 13, p. 23-35.

Treffinger, D.J. and Huber, J.R. "Designing Instruction in Creative Problem Solving." Journal of Creative Behavior. 1975, 9, p. 260-266.

Trow, W.C. "Educational Technology and the Computer." Educational Technology. December 1977, p. 18-21.